

ABSTRACT

A method is provided for improving layer to layer overlay of a second layer pattern on a first layer pattern formed in a substrate. A plurality of first reference marks is placed inside a pattern area on a first layer mask which is used to form the first layer pattern. A plurality of second reference marks is placed on a second layer mask which is used to form the second layer pattern and in which one second reference mark is matched with a first reference mark having the same (x,y) coordinates. Reference mark placement in the resulting first and second layer patterns is determined by metrology to determine an x-deviation and a y-deviation for each matched pair of reference marks. A correction algorithm is then used to calculate adjustments in exposure tool settings for improved overlay of the second layer pattern on the first layer pattern in subsequent exposures.